

RESEARCH AND DEVELOPMENT, NEUCHATEL - QUARTERLY REPORT

DIVISION : PROCESS DEVELOPMENT

SUBJECT TITLE : ET-PAN-EUROPE

PERIOD COVERED : APRIL - JUNE 1990

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OBJECTIVES

This project covers all activities regarding ET process - and product-quality improvements in the four PM European ET plants, particularly product interchangeability, standardization and optimization of blends, processes and products, technical review meetings and assistance in solving specific problems.

It includes related trials at affiliates or in the Miniprimary with the respective analytical follow-up, evaluation and reporting.

STATUS

1. Technical assistance to FTR-Onnens

1.1 Process gas temperature/production rate

Referring to the previous quarterly report (1), Onnens has experienced a 30% loss in production capacity which could be corrected by abnormally increasing the expansion temperature from 365 to 375-380°C for a production rate of 1150 kg/h.

Further investigations (2) have shown that the process-gas velocity and tower-steam concentration were on the low side, 35.6 m/s and 55.1% at idle conditions.

The following changes (3) were introduced on the 7 and 16 June to optimize the tower conditions and to increase the heat transfer efficiency :

- a) Process-gas velocity was increased up to 39 m/sec at idle conditions, and balancing the tower pressure balanced so as to reduce the pressure difference between the rotary valves.
- b) Tower static-pressure was increased from 8 to 30 mbar in order to minimize air intake from the rotary valves.

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- c) Tower steam-concentration was increased to 74% at idle conditions.

These changes brought the process-gas temperature back to normal (365 - 370 °C) for a production rate of 1200 kg/h. No significant changes (3) have been noticed on the sieve size distribution, but we observed a reduction of the expansion rate from 106 to 98%. The CCV of the expanded tobacco decreased from 9.1 to 8.6 cc/g which coincides also with a slight increase in the production rate from 1150 to 1200 kg/h. This matter is being followed-up.

1.2 Insulation of the Furnace system

The furnace system in Onnens was originally insulated by 30 mm thick rockwool board (external insulation) resulting in extreme high metal-casing temperature ranging from 160 to 365 °C, for a skin temperature on the insulation from 60 to 82 °C at normal operating conditions of the furnace.

Since March 1990, and apart from the top part of the heat exchanger and duct work (due to a close-by sprinkler), all external insulations have been progressively removed, consequently reducing the metal-wall temperature down to 63-74 °C.

A metal fissure and a slight distorsion of the gas-duct expansion joint was discovered, as well as a possible leak of the process-gas heat exchanger.

Contacts have been taken with a local insulation specialist "Schneider Dämmtechnik AG" to inspect the condition of the internal insulation during the forthcoming summer shutdown.

2. Common spare process-gas heat exchanger

During this coming summer shutdown, FTR will replace their original process-gas heat exchanger by the common spare ABB Air preheater in stock. For the records, PMG-Berlin took the opportunity to replace their ABB Air preheater in Nov. 1989 by a locally made heat exchanger.

Following their recent incident (1), PMG-Munich was in a rush to order a new heat exchanger and opted for the German make which has so far not shown any deficiency in Berlin. The process-gas heat exchanger for Munich will be delivered in September 1990 and installed in Autumn 1991.

Bergen op Zoom will be the only factory which still currently operates with the original ABB Air preheater exchanger due most probably to less metal fatigue as they run in 3 shift operations.

A questionnaire was sent out (4) to all affiliates on June 8 1990 to ask their opinions concerning the most suitable heat-exchanger supplier and date of acquisition for the common spare unit.

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It was recommended (5) postponing the decision up to March 1991 to get more experience from Berlin and also as the unit ordered by PMG-Munich will be considered as common spare, up to its installation in Autumn 1991.

3. Ensuring product interchangeability, product and process optimization in the four European ET plants (1,6,7)

Phase 1: Review of operating conditions of the ET process and product-quality parameters in the four affiliates.
After Munich, FTR and Berlin (1), this phase was completed for BOZ in week 17, 1990.

Phase 2: Evaluation and optimization of the ET process and product quality in the four European ET plants and exchange of technical know-how between affiliates.
First evaluation discussions took place in week 27 and are expected to be completed in week 34 and 35 (20 to 31 August).

4. Capacity increase in BOZ

Planning for new capacity to meet long-term production-volume requirements is well under way, but market growth dictates that production rates of 1350 kg/h will be required in the near future.

Preliminary discussions took place on April 26, 1990 (8) during our ET-PAN Europe evaluation program. It was pointed out that the ETNA process is already saturated at 1250 kg/h and that any additional capacity increase will be detrimental to the product quality. We commonly agreed first to optimize the ETNA process, to minimize the severity of additional quality losses at a higher rate.

A guide of improvements (9) dated 21 June 1990 was submitted to BOZ by Jack Knight for eventual implementation during the Stoomwezen shutdown from July 12 to August 4, depending on time constraints.

The first optimization trial runs are foreseen after the shutdown while the capacity-increase trials will take place in a later stage after completion of the optimization work, with the collaboration of the process-development group.

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PLANS

- Assistance to BOZ in the Stoomwezen inspection program and in ET plant optimization from July 12 to August 4, 1990.
- Training of P. Wetzel in PM USA-Richmond in the manufacturing center and R&D from mid-September to mid-October, 1990.
- ET-PAN EUROPE MEETING with all affiliates in November 1990. Date and location have not been defined yet.

REFERENCES

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- (6) Lüthi-N. ET-PAN EUROPE Project Outline
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